

**Amendments to the Specification**

At page 3, line 11, please insert the following:

- - AAPFCO discloses the following fertilizers which include:

**NITROGEN PRODUCTS**

- N-1. Ammortiated Superphosphate is a product obtained when superphosphate is treated with ammonia or with solutions which contain ammonia and other compounds of nitrogen. The guaranteed percentages of nitrogen and of Available Phosphate shall be stated as part of the name. (Official 1993)
- N-2. Ammonium Nitrate is chiefly the ammonium salt of nitric acid. It shall contain not less than thirty-three percent (33%) nitrogen, one-half of which is in the ammonium form and one-half in the nitrate form. (Official 1951)
- N-3. Calcium Nitrate is chiefly the calcium salt of nitric acid. It shall contain not less than fifteen percent (15%) nitrate nitrogen. (Official 1951)
- N-4. Nitrate of Potash (potassium nitrate) is chiefly the potassium salt of nitric acid. It shall contain not less than twelve percent (12%) nitrogen and forty-four percent (44%) Soluble Potash. (Official 1951)
- N-5. Nitrate of Soda (sodium nitrate) is chiefly the sodium salt of nitric acid. It shall contain not less than sixteen percent (16%) nitrate nitrogen and twenty-six percent (26%) sodium. (Official 1952)
- N-6. Nitrate of Soda and Potash (sodium and potassium nitrate) is chiefly the sodium and potassium salts of nitric acid. It shall contain not less than fifteen percent (15%) nitrate

nitrogen, ten percent (10%) soluble potash and eighteen percent (18%) sodium. (Official 1952)

N-7. Sulfate of Ammonia (ammonium sulfate) is chiefly the ammonium salt of sulfuric acid. It shall contain not less than, twenty and five-tenths percent (20.5%) nitrogen. (Official 1951)

N-8. Ammonium Sulfate Nitrate is a double salt of ammonium sulfate and ammonium nitrate which are present in equal molecular proportions. It shall contain not less than twenty-six percent (26%) nitrogen, one-fourth of which is in nitrate form and three-fourths in the ammonium form. (Official 1954)

N-9. Acidulated Fish Tankage (acidulated fish scrap) is the rendered product derived from fish and treated with sulfuric acid. (Official 1950)

N-10. Activated Sewage Products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with micro organisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground and screened. (Official 1950)

N-11. Bat Guano is partially decomposed bat manure. (Official 1951)

N-12. Cyanamide is a commercial product consisting principally of calcium cyanamide ( $\text{CaNCN}$ ) and carbon and it shall contain not less than nineteen and five tenths percent (19.5%) nitrogen.

N-13. Dried Blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve percent (12%) nitrogen. (Official 1950)

N-14. Animal Manures are the excreta of animals together with whatever bedding materials are needed to follow good dairy barn, feedlot, poultry house, etc., practice in order to maintain

proper sanitary conditions. (Official 1991)

N-15. Garbage Tankage is the rendered, dried and ground product derived from waste household food materials. (Official 1951)

N-16. Hoof and Horn Meal is processed dried, ground hoofs and horns. (Official 1951)

N-17. Peat is partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter that contains some nitrogen of low activity. (Official 1951)

N-18. Fish Tankage (fish scrap, dry ground fish, fish meal fertilizer grade) is the dried ground product derived from rendered or unrendered fish. (Official 1950)

N-19. Process Tankage is a product made under steam pressure from crude inert nitrogenous materials, with or without the use of acids or bases, for the purpose of increasing the activity of nitrogen. These products shall be called "Process Tankage" with or without further qualification. The water insoluble nitrogen in these products shall test at least fifty percent (50%) active by the alkaline, or eighty percent (80%) by the neutral permanganate method. (Official 1994)

N-20. Tankage (without qualification) is the rendered, dried, and ground by-product, largely meal and bone from animals (slaughtered or that have died otherwise). (Official 1950)

N-21. Sheep Manure Wool Waste is the by-product from wool--carding establishments consisting chiefly of sheep manure, seeds, and wool fiber. (Official 1961)

N-22. Crude, Inert, or Slow-Acting Nitrogenous Materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods, (below 50% and 80%

respectively). (Official 1964)

N-23. Urea is the commercial synthetic acid amide of carbonic acid and it shall contain not less than forty-five percent (45%) nitrogen. (Official 1966)

N-24. Ureaform Fertilizer Materials (sparingly soluble) are reaction products of urea and formaldehyde which contain at least thirty-five percent (35%) nitrogen, largely in insoluble but slowly available form. The water insoluble content shall be at least sixty percent (60%) of the total nitrogen. The water insoluble nitrogen in these products shall have an activity index of not less than forty percent (40%) when determined by the appropriate AOAC International method. (Official 1984)

N-25. Urea-Formaldehyde Products (sparingly soluble) are reaction products of urea and formaldehyde which contain less than thirty-five percent (35%) nitrogen, largely in insoluble but slowly available form. They shall have the percentage of total nitrogen as part of the product name; for example: 20% N Urea-Formaldehyde. The water insoluble Nitrogen shall be at least sixty percent (60%) of the total nitrogen. The activity index of the water insoluble nitrogen shall be either (1) not less than forty percent (40%) by the AOAC International method for Urea-formaldehyde Products or (2) not less than fifty percent (50%) by the AOAC International alkaline permanganate method or eighty percent (80%) by the neutral permanganate method. (Official 1984)

N-26. Isobutylidene Diurea - A condensation product of isobutyraldehyde and urea having a minimum total nitrogen content of thirty percent (30%). It is a source of slowly available nitrogen by virtue of particle size, solubility decreasing with increase in particle size. Material conforming to the description of a "granular fertilizer" will have ninety percent (90%) of its nitrogen content in the water- insoluble form prior to grinding as tested by AOAC International Method 945.01 (15th Edition). (Official 1986)

N-27. Sulfur Coated Urea (SCU) - A coated slow release fertilizer consisting of urea particles coated with sulfur. The product is usually further coated with a sealant (2% to 3% of total weight) and a conditioner (2% to 3% of total weight). It typically contains about thirty percent (30%) to forty percent (40%) nitrogen and about ten percent (10%) to thirty percent (30%) sulfur. (Official 1980)

N-28. Urea-Formaldehyde Products (water soluble) are reaction products of urea and formaldehyde which contain at least thirty percent (30%) nitrogen, largely in water soluble form. Some slowly available nitrogen products are present. Stable aqueous solutions may be prepared from these materials. The reaction products shall contain a maximum of fifty-five percent (55%) free urea, with the remainder of the urea being chemically combined as methylolureas, methylolurea ethers, and/or methylenediurea (MDU) and dimethylenetriurea (DMTU). (Official 1984)

N-29. Methylenediurea (MDU) is a water soluble condensation product resulting from the reaction of one molecule of formaldehyde with two molecules of urea, with the elimination of one molecule of water. It has a minimum total nitrogen content of forty-two percent (42%) and is a source of slowly available nitrogen. (Official 1984)

N-30. Dimethylenetriurea (DMTU) is a water soluble condensation product resulting from the reaction of two molecules of formaldehyde with three molecules of urea, with the elimination of two molecules of water, and having a minimum total nitrogen content of forty-one percent (41%). It is a source of slowly available nitrogen. (Official 1984)

N-31. Dicyanodiamide (cyanoquanidine) is a water soluble organic compound of formula  $C_2H_4N_4$  which contains at least sixty-five percent (65%) nitrogen. It is a source of slowly available nitrogen. (Official 1985)

N-32. Polymer Coated Urea (PCU) is a coated slow release fertilizer consisting of urea particles

coated with a polymer (plastic) resin. It typically contains about forty percent (40%) nitrogen. It is a source of slowly available nitrogen. (Official 1990)

N-33. Triazone is a water soluble compound of formula  $C_3H_7N_3O$  which contains at least forty-one percent (41%) total nitrogen. (CAS No. 7098-14-6, 1,3,5-triazin-2-one, tetrahydro-S-triazone.) (Official 1989)

N-34. Melamine is a sparingly soluble organic compound of formula  $C_3H_6N_6$  which contains at least sixty-six percent (66%) nitrogen. (CAS No. 108-78-1 2,4,6-triamino-1,3,6-triazine, triamino-s-triazine) (Official 1989)

N-35. Urea-Triazone Solution - is a stable solution resulting from controlled reaction in aqueous medium of urea, formaldehyde, and ammonia which contains at least twenty-five percent (25%) total nitrogen. The solution shall contain no more than forty percent (40%) nor less than five percent (5%) of total nitrogen from unreacted urea and not less than forty percent (40%) from triazone. All other nitrogen shall be derived from water soluble, dissolved reaction products of the above reactants. It is a source of slowly available nitrogen. (Official 1990)

N-36. Oxamide (fertilizer grade) is the diamide of oxalic acid of the formula  $C_2H_4N_2O_2$  which contains twenty-eight to thirty-two percent nitrogen (28%-32%). It is a source of slowly available nitrogen. (Official 1990)

N-37. Ammonium Thiosulfate (fertilizer grade) is a commercial product composed principally of  $(NH_4)_2S_2O_3$ . The guaranteed percentages of nitrogen and sulfur shall be stated as part of the name. (Official 1990)

**PHOSPHATE PRODUCTS (P<sub>2</sub>O<sub>5</sub>)**

- P-1. Phosphate is the amount of pentavalent phosphorus {P(V)} present in the material calculated as phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>). (Official 1997)
- P-2. Available Phosphate is the sum of the water soluble and the citrate-soluble phosphate. (Official 1993)
- P-3. Ammoniated Superphosphate is a product obtained when superphosphate is treated with ammonia or with solutions which contain ammonia and other compounds of nitrogen. The guaranteed percentages of nitrogen and of available phosphate shall be stated as part of the name. (Official 1993)
- P-4. Ammonium Phosphate (fertilizer grade) is a product obtained when phosphoric acid is treated with, ammonia (anhydrous or aqueous), and consists principally of monoammonium phosphate and diammonium phosphate or a mixture of these two salts. The guaranteed percentage of nitrogen and of available phosphate shall be stated as part of the name. (Official 1993)
- P-5. Ammonium Phosphate-Sulfate (fertilizer grade) is a product obtained when a mixture of phosphoric acid and sulfuric acid is treated with ammonia. It consists principally of a mixture of ammonium phosphate and ammonium sulfate. The guaranteed percentages of nitrogen and of Available Phosphate shall be stated as apart of the name. (Official 1993)
- P-6. Basic Lime Phosphate (lime-based superphosphate) is a superphosphate to which liming materials have been added in a quantify at least six percent (6%) calcium carbonate equivalent in excess of the quantity required to convert all water soluble phosphate to the citrate-soluble form. (Official 1951)
- P-7. Basic Phosphate Slag is a by-product obtained in the manufacture of steel from phosphatic

iron ores. The product shall contain no admixture of materials other than those resulting from the original process of manufacture. It shall contain not less than twelve percent (12%) of total phosphate, of which at least eighty percent (80%) shall be available phosphate. It shall be ground so that not less than seventy percent (70%) of the material passes through a U. S. Standard No. 100 sieve (150 um opening) and ninety percent (90%) passes through a U. S. Standard No. 50 sieve (300 um opening). Any basic phosphate slag not conforming to this definition shall be designated low phosphate. (Official 1993)

- P-8. Citrate-Soluble Phosphate is that part of the total phosphate in a fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to the method adopted by the AOAC International. (Official 1993)
- P-9. Dicalcium Phosphate is a manufactured product consisting chiefly of dicalcic salt of phosphoric acid, (Official 1951)
- P-10. Acidulated Bone is ground bone or bone meal that has been treated with sulfuric acid. (Official 1951)
- P-11. Ground Raw Bone is ground animal bones that have not been previously steamed under pressure, heated, or otherwise manipulated. (Official 1984)
- P-12. Bone Meal is ground animal bones that have been previously steamed under pressure, heated, or rendered sterile in some other acceptable manner. (Official 1997)
- P-13. Phosphate Rock is a natural rock containing one or more calcium phosphate minerals of sufficient purity and quantity to permit its use, either directly or after concentration, in the manufacture of commercial products. (Official 1952)
- P-14. Precipitated Phosphate is a product consisting mainly of dicalcium, phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or



processed bone. (Official 1961)

P-15. Superphosphate a product obtained when rock phosphate is treated with either sulfuric acid, phosphoric acid, or a mixture of those acids. The guaranteed percentage of available phosphate shall be stated as a part of the name. (Official 1993)

P-16. Soft Phosohate with Colloidal Clay is a very finely divided low- analysis by-product from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial ponds and basins farthest from the washer, and are later removed after the natural evaporation of the water. (Official 1951)

P-17. Calcium Metaphosohate is a vitreous product substantially free from crystalline phosphates, resulting from the treatment of phosphate rock with gaseous phosphorus pentoxide at high temperatures. The guaranteed percentage of available phosphate shall be stated as part of the name. (Official 1993)

P-18. Polyphosphates is a general term pertaining to salts of any of a series of polyphosphoric acids, whose molecular structure contain two or more phosphorus atoms linked by oxygen. Solutions may contain several species such as orthophosphates, pyrophosphates, and polyphosphates containing three (3) or more phosphorus atoms, commonly known as tripolyphosphates or tetrapolyphosphates and water. (Official 1976)

P-19. Superphosphonic Acid is the acid form of polyphosphates, consisting of a mixture of orthophosphoric and polyphosphonic acids. Species distribution varies with concentration, typically sixty-eight to eighty-three percent (68 to 83%)  $P_2O_5$ . (Official 1976)

P-20. Calcined Phosohate is phosphate rock which has been heated, with or without one or more catalysts or reagents, sufficient to volatilize and remove most or all organic, carbonate, fluoride and other impurities, and/or thermally altered to more available calcium phosphate

compounds, depending on the process. A significant portion of the phosphate is citrate soluble and such percentage shall be stated as part of the brand name. Included are products known as fused tricalcium phosphate, defluorinated phosphate, rhenania phosphate and various trade names. (Official 1994)

P-21. DAP (fertilizer grade) is a product composed of ammonium phosphates, principally diammonium phosphate, resulting from the ammoniation of phosphoric acid. It may contain up to 2% non-ammoniacal nitrogen. The guaranteed percentage of nitrogen and available phosphate shall be stated as part of the name. (Official 1993)

P-22. MAP (fertilizer grade) is a product composed of ammonium phosphates, principally monoammonium phosphate, resulting from the ammoniation of phosphoric acid. The guaranteed percentage of nitrogen and available phosphate shall be stated as part of the name. (Official 1991)

P-23. Magnesium Ammonium Phosphate is chiefly the ammonium and magnesium double salt of orthophosphonic acid and its condensates. It shall contain not less than seven percent (7%) nitrogen, thirteen percent (13%) magnesium and forty percent (40%) available phosphate. It is a source of slowly available nitrogen, magnesium, and available phosphate. (Official 1996)

P-24, Magnesium Potassium Phosphate is chiefly the magnesium and potassium double salt of orthophosphoric acid and its condensates. It shall contain not less than twenty one percent (21%) soluble potash, twelve percent (12%) magnesium and thirty six percent (36%) available phosphate. It is a source of slowly available potash, magnesium and available phosphate. (Official 1995)

At page 3, line 28, please insert the following.

AAPFCO discloses the following Potash sources which include

- K-1. The term Potash designates potassium oxide ( $K_2O$ ). (Official 1957)
- K-2. Soluble Potash is that portion of the potash contained in fertilizer or fertilizer materials which is soluble in aqueous ammonium oxalate, aqueous ammonium citrate, or water, according to an applicable AOAC International method. (Official 1986)
- K-3. Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve percent (12%) soluble potash ( $K_2O$ ). (Official 1975)
- K-4. Mine Run Potash Salts are potash salts containing a high percentage of chloride and from twenty percent (20%) to thirty percent (30%) soluble potash ( $K_2O$ ). (Official 1951)
- K-5. Muriate of Potash (commercial potassium chloride) is a potash salt containing forty-eight percent (48%) to sixty-two percent (62%) soluble potash ( $K_2O$ ) chiefly as chloride. (Official 1951)
- K-6. Nitrate of Potash (potassium nitrate) is chiefly the potassium salt of nitric acid. It shall contain not less than twelve percent (12%) nitrogen and forty-four percent (44%) soluble potash. (Official 1951)
- K-7. Nitrate of Soda and Potash (sodium and potassium nitrate) is chiefly the sodium and potassium salts of nitric acid. It shall contain not less than fifteen percent (15%) nitrate nitrogen, ten percent (10%) soluble potash and eighteen percent (18%) sodium. (Official 1952)

- K-8. Sulfate of Potash-Magnesia is a potash salt containing not less than twenty-five percent (25%) soluble potash ( $K_2O$ ) nor less than twenty-five percent (25%) sulfate of magnesia and not more than two and one-half percent (2.5%) chlorine, (Official 1950)
- K-9. Double Sulfate of Potash and Magnesia (Langheinite) is a commercial product containing not less than, twenty-one percent (21%) soluble potash ( $K_2O$ ) nor less than fifty-three percent (53%) sulfate of magnesia and not more than two and one-half percent (2.5%) chlorine. (Official 1950)
- K-10. Sulfate of Potash (commercial potassium sulfate) is a potash salt containing not less than forty-eight percent (48%) soluble potash ( $K_2O$ ), chiefly as sulfate, and not more than two and one-half percent (2.5%) chlorine. (Official 1950)
- K-11. Kelp - (seaweed) is the dried marine algae of the botanical divisions of Rhodophyta (red algae), Phaeophyta (brown algae), and Chlorophyta (green algae). (Official 1992)